What is claimed is:

1. The fabrication method of a nitride semiconductor device comprising:

forming a stack of nitride semiconductor by growing at least one or more n-type nitride semiconductor layers, an active layer having a quantum well structure including at least a well layer of $Al_aIn_bGa_{1-a-b}N$, ($0 \leq a \leq 1$, $0 \leq b \leq 1$, $a + b \leq 1$) and a barrier layer of $Al_cIn_dGa_{1-c-d}N$, ($0 \leq c \leq 1$, $0 \leq d \leq 1$, $c + d \leq 1$), and one or more p-type nitride semiconductor layers on one main face of a substrate for growing nitride semiconductor that has two mutually opposed main faces and has a thermal expansion coefficient higher than those of said n-type and p-type nitride semiconductor layers;

forming a first bonding layer including one or more metal layers on said p-type nitride semiconductor layers;

forming a second bonding layer including one or more metal layers in one main face of a supporting substrate having two mutually opposed main faces and having a thermal expansion coefficient higher than those of said n-type and p-type nitride semiconductor layers and equal to or smaller than that of said substrate for growing nitride semiconductor;

setting said first bonding layer and said second bonding layer face to face each other and pressing said stack of nitride semiconductor and said supporting substrate with heat to bond together; and

removing said substrate for growing nitride semiconductor from said stack of the nitride semiconductor.

2. The fabrication method of a nitride semiconductor device according to claim 1, wherein said supporting substrate is conductive.

3. The fabrication method of a nitride semiconductor device according

to claim 1, wherein said substrate for growing nitride semiconductor is an insulating substrate.

4. The fabrication method of a nitride semiconductor device according to claim 1, wherein said supporting substrate is conductive and said substrate for growing nitride semiconductor is an insulating substrate.

5. The fabrication method according to claim 1, wherein said first bonding layer has an ohmic electrode layer formed adjacent to said p-type nitride semiconductor layers.

6. The fabrication method of a nitride semiconductor device according to claim 1, wherein said first bonding layer and said second bonding layer respectively have the first eutectic-forming layer and the second eutectic-forming layer and form an eutectic by mutual diffusion of the metals composing the first and the second eutectic-forming layers at the time of bonding.

7. The fabrication method according to claim 1, wherein an under layer including a buffer layer of $Ga_eAl_{1-e}N$, $(0 < e \leq 1)$ and a high-temperature-grown layer of either undoped GaN or GaN doped with an n-type impurity are formed directly on one main face of said substrate for growing nitride semiconductor.

8. The fabrication method according to claim 7, wherein said buffer layer and said high-temperature-grown layer are removed after said substrate for growing nitride semiconductor is removed.

9. The fabrication method according to claim 1, wherein said well layer and barrier layer are respectively $Al_aIn_bGa_{1-a-b}N$, $(0 < a \leq 1, 0 < b \leq 1, a + b < 1)$ and $Al_cIn_dGa_{1-c-d}N$, $(0 < c \leq 1, 0 < d \leq 1, c + d < 1)$ and said n-type nitride semiconductor layers containing Al.

10. The fabrication method according to claim 1, wherein said

substrate for growing nitride semiconductor is removed by radiating electromagnetic wave to the entire face of the other main face of said substrate for growing nitride semiconductor.

11. The fabrication method according to claim 1, wherein a coating layer containing a phosphor substance is formed at least in a portion of the surface of said nitride semiconductor device.

12. A fabrication method of a nitride semiconductor device comprising:

growing an under layer including a nitride semiconductor having a characteristic to absorb the light emitted by said device on one main face of a substrate for growing that has two mutually opposed main faces;

forming at least one or more n-type nitride semiconductor layers, an active layer having a quantum well structure including at least a well layer of $Al_aIn_bGa_{1-a-b}N$, ($0 \leq a \leq 1$, $0 \leq b \leq 1$, $a + b \leq 1$) and a barrier layer of $Al_cIn_dGa_{1-c-d}N$, ($0 \leq c \leq 1$, $0 \leq d \leq 1$, $c + d \leq 1$), and one or more p-type nitride semiconductor layers on said under layer;

bonding a supporting substrate to the surface of said p-type nitride semiconductor layers; and

removing said substrate for growing and said under layer.

13. The fabrication method of a nitride semiconductor device according to claim 12, wherein said active layer have luminescence wavelength of 380 nm or shorter and said under layer includes GaN.

14. The fabrication method according to claim 12, wherein said well layer and barrier layer are respectively $Al_aIn_bGa_{1-a-b}N$, ($0 < a \leq 1$, $0 < b \leq 1$, $a + b < 1$) and $Al_cIn_dGa_{1-c-d}N$, ($0 < c \leq 1$, $0 < d \leq 1$, $c + d < 1$) and said n-type nitride semiconductor layers containing Al.

15. The fabrication method according to claim 12, wherein said

substrate for growing nitride semiconductor is removed by radiating electromagnetic wave to the entire face of the other main face of said substrate for growing nitride semiconductor.

16. The fabrication method according to claim 12, wherein a coating layer containing a phosphor substance is formed at least in a portion of the surface of said nitride semiconductor device.

17. A nitride semiconductor device comprising:

a substrate having two opposed main faces and having a thermal expansion coefficient higher than that of a nitride semiconductor;

a bonding layer placed on one main face of said substrate and including an eutectic layer;

one or more p-type nitride semiconductor layers placed on said bonding layer;

an active layer including at least a well layer of $Al_aIn_bGa_{1-a-b}N$, ($0 < a \leq 1$, $0 < b \leq 1$, $a + b < 1$) and a barrier layer of $Al_cIn_dGa_{1-c-d}N$, ($0 < c \leq 1$, $0 \leq d \leq 1$, $c + d < 1$) and placed on said p-type nitride semiconductor layers; and

one or more n-type nitride semiconductor layers containing Al and placed on said the active layer.

18. The nitride semiconductor device according to claim 17, wherein said substrate is conductive.

19. The nitride semiconductor device according to claim 17, wherein said substrate includes one or more metals selected from Ag, Cu, Au and Pt and one or more metals selected from W, Mo, Cr and Ni.

20. The nitride semiconductor device according to claim 17, wherein said substrate is made of a metal composite of two or more metals with no solid solubility or low solid solubility each other.

21. The nitride semiconductor device according to claim 17, wherein said substrate is a composite of a metal and a ceramic.

22. The nitride semiconductor device according to claim 17, wherein said nitride semiconductor device comprises an n-electrode contacting with the surface of said n-type nitride semiconductor layers

and wherein said n-type nitride semiconductor layers comprising at least two layers; a first n-type nitride semiconductor layer doped with an n-type impurity as a layer contacting with said n-electrode and a second n-type nitride semiconductor layer un-doped or doped with an n-type impurity in a less amount than that of said first n-type nitride semiconductor layer near to said active layer side than said first n-type nitride semiconductor layer.

23. The nitride semiconductor device according to claim 17, wherein said p-type nitride semiconductor layers include a p-type contact layer of $Al_fGa_{1-f}N$, $(0 < f < 1)$.

24. The nitride semiconductor device according to claim 23, wherein said p-type contact layer has a graded composition with a high p-type impurity concentration and a small mixed crystal ratio of Al in the substrate side.

25. The nitride semiconductor device according to claim 24, wherein said p-type contact layer is composed of two layers and said two layers are an $Al_gGa_{1-g}N$, $(0 < g < 0.05)$ layer formed adjacent to said p-electrode and an $Al_hGa_{1-h}N$, $(0 < h < 0.1)$ layer formed adjacent to the active layer side and said $Al_gGa_{1-g}N$, $(0 < g < 0.05)$ layer has a higher p-type impurity concentration than that of said $Al_hGa_{1-h}N$, $(0 < h < 0.1)$ layer.

26. The nitride semiconductor device according to claim 17, wherein said nitride semiconductor device is a light emitting device and comprises a coating layer containing a phosphor substance capable of absorbing light from

said light emitting device and emitting luminescence with wavelength difference from that of the light emitting device and said coating layer is formed in at least a portion of the surface of said light emitting device.

27. A nitride semiconductor device comprising:

a substrate having two opposed main faces;

a bonding layer placed on one main face of said substrate and including an eutectic layer;

one or more p-type nitride semiconductor layers placed on said bonding layer;

an active layer including at least a well layer of $Al_aIn_bGa_{1-a-b}N$, ($0 < a \leq 1$, $0 < b \leq 1$, $a + b < 1$) and a barrier layer of $Al_cIn_dGa_{1-c-d}N$, ($0 < c \leq 1$, $0 \leq d \leq 1$, $c + d < 1$) and placed on said p-type nitride semiconductor layers; and

n-type nitride semiconductor layers placed on said active layer and made of a nitride semiconductor which does not substantially absorb the light emitted from said active layer.

28. The nitride semiconductor device according to claim 27, wherein said nitride semiconductor device comprises an n-electrode contacting with the surface of said n-type nitride semiconductor layers

and wherein said n-type nitride semiconductor layers comprising at least two layers; a first n-type nitride semiconductor layer doped with an n-type impurity as a layer contacting with said n-electrode and a second n-type nitride semiconductor layer un-doped or doped with an n-type impurity in a less amount than that of said first n-type nitride semiconductor layer near to said active layer side than said first n-type nitride semiconductor layer.

29. The nitride semiconductor device according to claim 27, wherein said p-type nitride semiconductor layers include a p-type contact layer of

$Al_fGa_{1-f}N$, $(0 < f < 1)$.

30. The nitride semiconductor device according to claim 29, wherein said p-type contact layer has a graded composition with a high p-type impurity concentration and a small mixed crystal ratio of Al in the substrate side.

31. The nitride semiconductor device according to claim 30, wherein said p-type contact layer is composed of two layers and said two layers are an $Al_gGa_{1-g}N$, $(0 < g < 0.05)$ layer formed adjacent to said p-electrode and an $Al_hGa_{1-h}N$, $(0 < h < 0.1)$ layer formed adjacent to the active layer side and said $Al_gGa_{1-g}N$, $(0 < g < 0.05)$ layer has a higher p-type impurity concentration than that of said $Al_hGa_{1-h}N$, $(0 < h < 0.1)$ layer.

32. The nitride semiconductor device according to claim 27, wherein said nitride semiconductor device is a light emitting device and comprises a coating layer containing a phosphor substance capable of absorbing light from said light emitting device and emitting luminescence with wavelength difference from that of the light emitting device and said coating layer is formed in at least a portion of the surface of said light emitting device.